



## *X-Plain™* LASIK

### Reference Summary

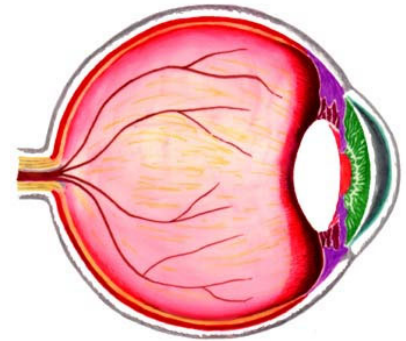
LASIK surgery is a procedure that improves vision and can decrease or eliminate the need for eyeglasses or contact lenses. If you and your doctor decide that LASIK surgery is right for you, it is important to know the benefits and risks of this procedure before consenting to it. This reference summary explains what LASIK surgery is and covers the benefits and possible risks of the surgery.

#### **Anatomy**

The eyes are very sophisticated optical organs that collect light and focus it, allowing us to see. The cornea is the front, transparent part of the eye. The cornea allows light to enter and starts to focus it as the light moves to the back of the eye.

After entering through the cornea, light hits the iris, which is the colored part of the eye. The opening in the middle of the iris is called the pupil. The iris controls the amount of light entering the eye by changing the size of the pupil.

As light passes through the pupil, it goes through a clear lens. Like the lens of a camera, the lens of the eye further focuses the light onto the back of the eye, called the retina.



The capsule holds the lens in place. After hitting the lens and before reaching the back of the eye, light rays travel through a transparent fluid called vitreous. The back of the eye is called the retina. The retina changes light signals into electric signals. These electric signals are sent through the optic nerve to the brain, which translates these signals into the images that we see.

#### **Refractive Errors**

The shape of the cornea and eye can cause blurry vision. Ideally, we should see images that are sharp as a result of being focused on the retina.

When an image gets focused in front of or behind the retina, the result is blurry vision. This produces astigmatism, near-sightedness, and far-sightedness. These abnormalities are called “refractive errors.” People who are near-sighted are able to

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clearly see things near them, but cannot see things that are far away very well. This condition is also called “myopia.” Far-sighted people are able to clearly see things far away but have difficulty seeing things that are close. This condition is also called “hyperopia.”

Astigmatism causes images to appear distorted and happens when there are irregularities in the cornea or in the lens of the eye. Contact lenses and eyeglasses refocus images on the retina, which restores normal vision.

Many surgical procedures have been developed to help refocus images onto the retina. Among them, LASIK is the one that is currently used the most in the United States. The following section will review some of the various surgical procedures that improve vision; they are known as “refractive surgery.”

## **Refractive Surgery**

The goal of refractive surgery is to refocus images onto the retina. The most common way of doing this is by reshaping the cornea. Photo Refractive Keratectomy, or PRK, reshapes the cornea using a laser light. Laser is a focused ray of light that, in medicine, is used to destroy various types of tissues with extreme precision. In this case it is used to reshape the cornea. The healing cornea is very painful and itchy. To avoid the bothersome healing process, LASIK was developed.

LASIK stands for “laser assisted in situ keratomileusis” and it means the use of a laser to reshape the cornea without disturbing nearby cells. The main way that LASIK is different than PRK is that LASIK creates a small flap in the cornea before reshaping it. The flap is placed back over the reshaped cornea, decreasing the symptoms of pain and itching in the eye.

Another type of refractory surgery is called “thermokeratoplasty.” This surgical procedure uses heat to reshape the cornea and a different laser than the ones used in PRK and LASIK.

There are other surgeries that can reshape the cornea using various other materials. Such surgeries use ring-like structures that are implanted in the cornea or special contact lenses that temporarily reshape the cornea.



## **LASIK**

Not everyone who uses eyeglasses or contact lenses is a good candidate for LASIK.

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Patients should be older than 18 before LASIK is considered. This is the guideline because it is possible for the eyes to change until around the age of 18. If LASIK surgery is an option for you, your eye doctor should be sure that your eye condition has not changed over the last few years.

Other eye conditions can make LASIK unsuitable for certain patients, including

- diabetes
- cataracts
- herpes infection of the eye
- rheumatoid arthritis.

If your doctor recommends LASIK surgery for you, be sure to check with your health insurance. Many health insurance companies consider this procedure to be elective and do not cover the expenses.

### **Preparing for LASIK**

Before choosing to have LASIK surgery, you must see an optometrist or an ophthalmologist for a very thorough eye exam. With the results of your exam, the doctor will be able to tell you whether or not LASIK surgery is suitable for you. If you could benefit from LASIK surgery and choose to do so, you will be scheduled for the actual procedure.

A few days before the LASIK procedure, you will meet with the ophthalmologist who will perform the surgery. He or she will review your previous exam and obtain a detailed, computerized map of your cornea. The computerized map is made using a special machine; it is a short, painless procedure.

Using the map of your cornea, a computer determines where the laser beam should be used on the cornea to reshape it and improve the vision. You will not be able to wear contact lenses for a certain amount of time prior to the LASIK procedure; your doctor will tell you how long. Contact lenses affect the curvature of the cornea and, therefore, could affect the result of the LASIK surgery.



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You will also be asked not to wear any make up, lotion, or other similar products on your face for a few days before the procedure. This precaution decreases the chances of infection at the time of surgery.

The best results for LASIK are seen in patients with *moderate* vision problems. Patients with very severe myopia can benefit from LASIK but may still need to wear glasses or contacts after the procedure.

## **Procedure**

LASIK is an outpatient procedure. Patients go home the same day. You should arrange to have someone drive you home after a LASIK procedure, since your vision might be blurry at first.

While in the operating room, the eye is anesthetized with special eye drops to eliminate pain.

The cornea is held in place with a vacuum device. The ophthalmologist makes a flap in the cornea using a special instrument. The flap is lifted out of the way of the laser. The laser is then used to reshape the cornea.

After the cornea is reshaped, the ophthalmologist replaces the flap over the cornea, which completes the procedure. The flap does not need to be stitched; it sticks to the underlying cornea on its own. The whole procedure only takes about 15 minutes. Some ophthalmologists encourage patients to have both eyes operated on at the same time and others prefer to do each eye separately.

## **After The Procedure**

You will be given eye drops to moisturize and lubricate your eye.

It takes 1-2 days for the flap to stick securely to the cornea. During that time, you should not rub your eye at all.

Your ophthalmologist will probably give you an eye shield to prevent accidents during the first few nights. Sunglasses may also help if it is sunny or you encounter bright light. You will be given antibiotic and anti-inflammatory eye drops.

Most patients see great improvement in their vision within the first few days after a LASIK operation. However, immediately after the procedure, vision may be slightly blurry.



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Here are some tips to help you through the first week of recovery:

- Rest as much as possible for the first few days.
- Refrain from swimming or using a hot tub.
- While bathing, avoid getting water or shampoo in your eye.
- Avoid using make-up, as well as activities that expose your eyes to smoke, dirt, or dust.
- Avoid activities that might strain your eyes, such as watching TV for long periods of time.

You may be able to drive after a few days, depending on how your eyes feel and how clear your depth perception is.

You will need to return for a follow up visit with your ophthalmologist.

## **Risks & Complications**

LASIK is a very safe procedure; risks and complications are rare but possible. Knowing about them will help you identify them and treat them early in case they happen.

The cornea could get infected, requiring antibiotics.

Scarring of the cornea and surrounding structures could lead to permanent vision problems that may not be correctable with glasses or lenses. Such scarring may prevent the future use of contact lenses. This is extremely rare.

Sometimes there is a decrease in visual sharpness and, even with corrective lenses things may look hazy around the edges.

Occasionally, patients experience what are called “halos” or “starbursts.” These sensations make it look like a halo of light is surrounding bright objects. For example, stars might appear as small circles of light rather than points of light. Flap problems are rare but possible; they could lead to more surgery and decreased vision. Flap complications include:

- irregular flap
- incomplete flap

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- cut off flap
- growth of cells under the flap.

In extremely rare cases, the cornea may be perforated during or after surgery. This could lead to a more complicated eye surgery, the need to replace the lens of the eye, or stitching the cornea back on. It is extremely rare for the cornea to become perforated.

Rarely, the eye may permanently feel dry, scratchy, or painful. LASIK surgery cannot be reversed. However, it can be repeated in order to improve the results. If you choose to have LASIK surgery to correct your *distance* vision, you may still need reading glasses when you are around 45 or so.

### Summary

LASIK surgery is a very common and safe procedure. It allows doctors to correct a wide range of vision problems using a laser beam.



Seventy percent of patients who undergo LASIK end up with 20/20 vision. LASIK surgery is a relatively safe procedure. Some complications and risks are possible. It is important to have realistic expectations regarding how much better you will see after LASIK surgery.

LASIK surgery is not for everyone. If you are eligible, your doctor will answer any questions you may have and give you answers that are specific to your condition.

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